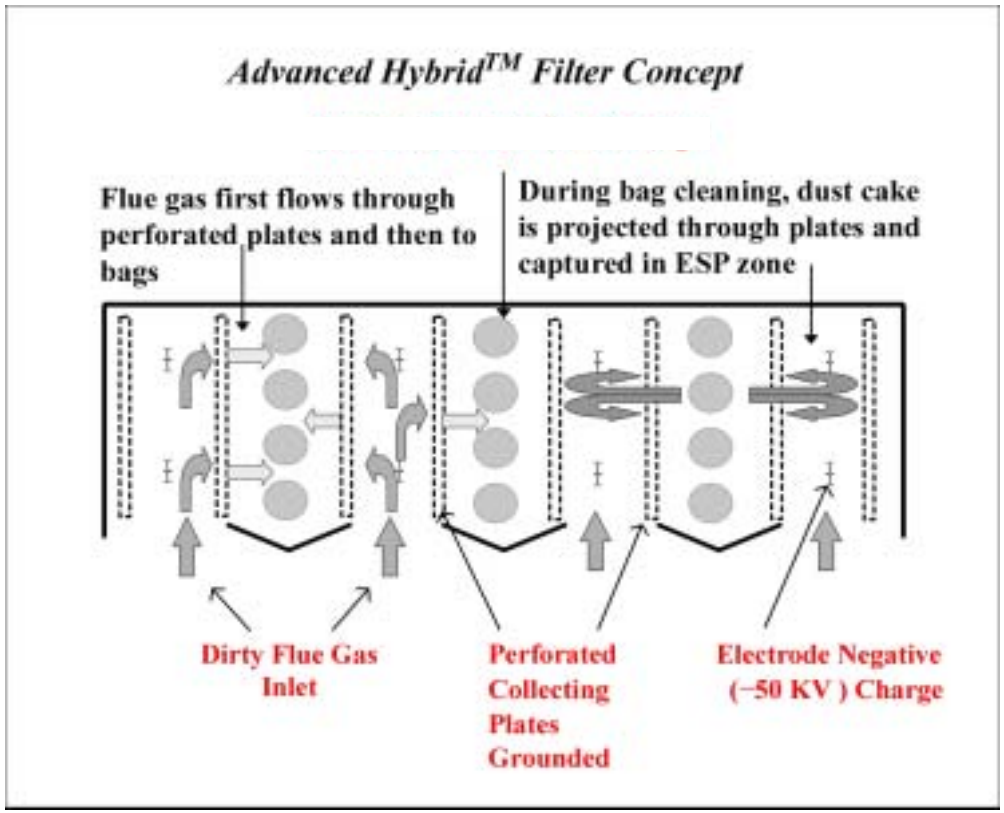
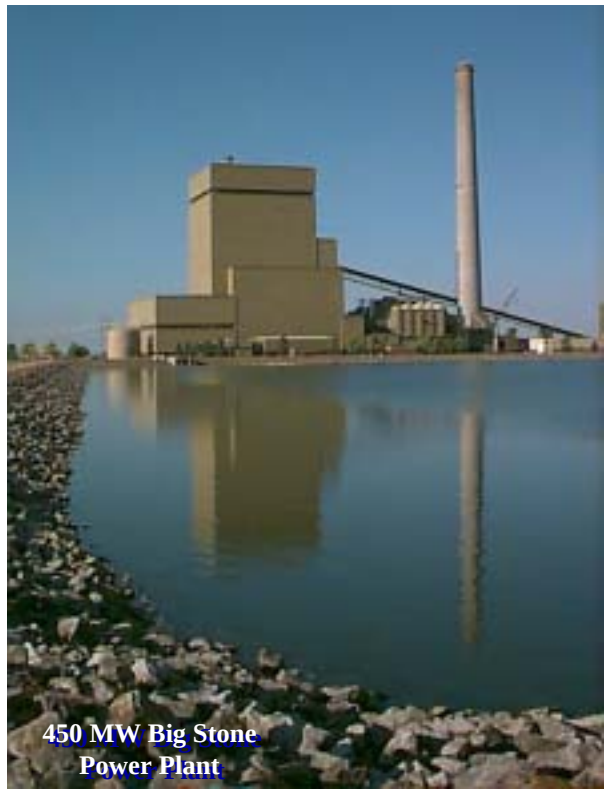
Otter Tail Power Company

- 450 MW demonstration of Advanced Hybrid Particulate Collector (now known as Advanced Hybrid™) technology.
- Raises particulate matter (PM) capture for coal plants up to 99.99%.
- Total Project funding: $13.3 million ($6.5 million DOE).





A PPII Clean Coal Project

Background

- **Otter Tail Power Company is demonstrating Advanced Hybrid™ on a cyclone boiler firing Wyoming's Powder River Basin (PRB) coal.**
- **Project Location**
  - Big Stone Power Plant, Big Stone City, SD
- **Additional Team Members**
  - Montana-Dakota Utilities and NorthWestern Public Service (Big Stone co-owners).
  - W.L. Gore & Associates, Inc. (Advanced Hybrid™ licensee, filter bag supplier).
  - University of North Dakota Energy and Environmental Research Center (Advanced Hybrid™ concept developer).

Technology Uniqueness

- **Combines ESP and baghouse best features in a novel manner.**
  - Filter bags and precipitator plates in one housing.
- **Technology combination allows filter bags to be made of highly efficient membrane material.**
- **Operates at 2.5 - 4 times throughput of conventional fabric filters.**
- **Almost complete capture (99.99%) of fine PM.**
  - Overcomes excessive ESP fine PM emissions.
  - Solves reentrainment/recollection of dust in baghouses.

Schedule

- **Project Start**
  - Construction: July 2002 to October 2002
  - Startup completed: October 25, 2002
- **NEPA Process**
  - EA and FONSI completed: June 2002
- **Testing**
  - Ongoing
- **Project Completion**
  - Planned: November 2004

Potential Benefits

- **Allows PRB coal to be burned in units where existing ESP's cannot effectively capture high-resistivity dust; enables fuel switching options and avoids peak load plant deratings.**
- **This technology has superior collection of fine particulate emissions in a cost-effective, compact-sized device.**
  - Economically competitive for today's standards
  - Economic choice for tomorrow's possible standards
- **Advanced Hybrid™ effectively controls non-vapor phase heavy metals.**